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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/778,992	02/07/2001	Ross Halgren	41761/DBP/C664	2391
23363	7590	02/08/2005	EXAMINER	
CHRISTIE, PARKER & HALE, LLP PO BOX 7068 PASADENA, CA 91109-7068			PAYNE, DAVID C	
			ART UNIT	PAPER NUMBER
			2633	

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/778,992	Applicant(s) HALGREN, ROSS	
	Examiner David C. Payne	Art Unit 2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-17 and 23-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-13, 16, 17 and 23-25 is/are rejected.
- 7) ☒ Claim(s) 14 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>24 September 2004</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 8-13, 16, 17, and 23-25 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
3. Claims 8, 9, 12, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bala et al. US 6,272,154 B1 (Bala) in view of Solheim et al. US 6,522,671 B1 (Solheim).

Re claim 8, 9 Bala taught An optical switch comprising: a plurality of optical to electronic (OE) interface units for receiving a plurality of demultiplexed signals respectively, each OE interface unit comprising: an OE converter for converting a respective demultiplexed signal to a corresponding electrical signal (251 of Figure 2, e.g., col./line: 6/15-20), and a data and clock recovery circuit for recovery of data and corresponding clocking information from the corresponding electrical signal and outputting said data as a respective recovered electrical signal (254a of Figure 2, e.g., col./line: 6/34-36), said data and clock recovery circuit recovering data streamed at multiple different clock rates (e.g., col./line: 3/15-20); an electronic switch for transmitting each of the respective recovered electrical signals to at least one of a plurality of output ports under control of an external control signal (255 of Figure 2, e.g., col./line: 6/14-20); and a plurality of

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electronic to optical (EO) interface units coupled to said plurality of output ports, respectively (258 of Figure 2, e.g., col./line: 6/45-50).

Bala does not disclose where the clock and data recovery recovers multi-protocol data. Solheim disclosed a multi-rate, mutli-protocol clock and data recovery system, Figures 2, 3 and 4, e.g., col. 3 lines 50-67 and col. 4 lines 1-10. It would have been obvious to one of ordinary skill in the art at the time of invention to provide multi-protocol data recovery in the Bala invention since it is desirable to accommodate and interface with the growing number of optical fiber communication system use different protocols and different rates for increased flexibility and complexity of services, see e.g., col. 1 lines 14 22.

Re claims 12, 13, the modified invention of Bala and Solheim disclosed extracting signal information used for signal processing at multiple different clock rates and protocols and performance monitoring (see Solheim e.g., col./line: 9/30-45).

4. Claim(s) 10, 11, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bala et al. US 6,272,154 B1 (Bala) in view of Solheim et al. US 6,522,671 B1 (Solheim) and Johnston, Jr. US 6,101,204 (Johnston).

Re claim 17, Bala taught An optical switch comprising: a plurality of optical to electronic (OE) interface units for converting a plurality of demultiplexed optical signals to a plurality of corresponding electrical signals (251 of Figure 2, e.g., col./line: 6/15-20); an electronic switch (255 of Figure 2, e.g., col./line: 6/14-20) for transmitting a respective electrical signal to at least one of a plurality of output ports; and a plurality of electronic to optical (EO) interface units (258 of Figure 2, e.g., col./line: 6/45-50) at said plurality

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of output ports,

a first port for receiving a signal (251a of Figure 2); and a second port (258 of Figure 2) for passing the respective signal to an external multiplexer (236a of Figure 2) for forming a combined optical data stream output.

an OE converter for converting a respective demultiplexed signal to a corresponding electrical signal (251 of Figure 2, e.g., col./line: 6/15-20), and a data and clock recovery circuit for recovery of data and corresponding clocking information from the corresponding electrical signal and outputting said data as a respective recovered electrical signal (254a of Figure 2, e.g., col./line: 6/34-36), said data and clock recovery circuit recovering data streamed at multiple different clock rates (e.g., col./line: 3/15-20); an electronic switch for transmitting each of the respective recovered electrical signals to at least one of a plurality of output ports under control of an external control signal (255 of Figure 2, e.g., col./line: 6/14-20); and a plurality of electronic to optical (EO) interface units coupled to said plurality of output ports, respectively (258 of Figure 2, e.g., col./line: 6/45-50).

Bala does not disclose where the clock and data recovery recovers multi-protocol data. Solheim disclosed a multi-rate, mutli-protocol clock and data recovery system, Figures 2, 3 and 4, e.g., col. 3 lines 50-67 and col. 4 lines 1-10. It would have been obvious to one of ordinary skill in the art at the time of invention to provide multi-protocol data recovery in the Bala invention since it is desirable to accommodate and interface with the growing number of optical fiber communication system use different protocols and different rates for increased flexibility and complexity of services, see e.g., col. 1 lines 14 22.

Bala does not disclose each EO interface unit comprising: an externally generated laser signal, a modulator for modulating the respective received laser signal.

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Johnston disclosed externally modulated lasers (e.g., col./line: 2/1-5) It would have been obvious to one of ordinary skill in the art at the time of invention to use externally modulated laser in the Bala invention for the benefit of obtaining wavelength as well as amplitude modulation as disclosed in Johnston (e.g., col./line: 2/9,10).

Re claim 10, the modified invention of Bala, Solheim and Johnston as taught disclosed an externally modulated laser (see Johnston, e.g., col./line: 2/9,10).

Re claim 11, Bala disclosed the aforementioned invention but does not disclose a directly modulated laser. However it would have been obvious to one of ordinary skill in the art at the time of invention that this is the most common type of modulation and cheapest type of modulation used in the optical technology and is extremely well known in the art.

Re claim 16, the modified invention of Bala, Solheim and Johnston as taught disclosed a first demultiplexer (60 of Figure 8A) for demultiplexing a wavelength division multiplexed signal into a respective demultiplexed signal; and at least a first multiplexer (multiplexer in box 61 of Figure 8A) interconnected to the plurality of EO interface units for multiplexing optical output streams from a respective EO interface unit together to form a combined optical data stream output.

5. Claim(s) 23 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroyanagi et al. US 6,433,900 B1 (Kuroyanagi) in view of Bala et al. US 6,272,154 B1 (Bala) and Solheim et al. US 6,522,671 B1 (Solheim).

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Re claim 23 Kuroyanagi taught

A fault tolerant optical switch apparatus comprising: at least a first demultiplexer (60 of Figure 8A) for demultiplexing a wavelength division multiplexed signal into corresponding spatially separated plurality of demultiplexed signals; at least a first multiplexer (multiplexer in box 61 of Figure 8A) for multiplexing a plurality of optical output streams to form a combined optical data stream output; a first (optical XC NODE 0-system of Figure 8A) and a second optical switch (optical XC NODE 1-system of Figure 8A), wherein the first demultiplexer and the first multiplexer are interconnected to the first and the second optical switches to provide fault tolerant operation.

Kuroyanagi does not disclose

each optical switch comprising: a plurality of optical to electronic (OE) interface units for receiving a plurality of demultiplexed signals respectively, each OE interface unit comprising: an OE converter for converting a respective demultiplexed signal to a corresponding electrical signal, and a data and clock recovery circuit for recovery of data and corresponding clocking information from the corresponding electrical signal and outputting said data as a respective recovered electrical signal, said data and clock recovery circuit recovering data streamed at multiple different clock rates and multiple different protocols; an electronic switch for transmitting each of the respective recovered electrical signals to at least one of a plurality of output ports under control of an external control signal; and a plurality of electronic to optical (EO) interface units coupled to said plurality of output ports, respectively.

Bala taught An optical switch comprising: a plurality of optical to electronic (OE) interface units for receiving a plurality of demultiplexed signals respectively, each OE interface unit comprising: an OE converter for converting a respective demultiplexed signal to a corresponding electrical signal (251 of Figure 2, e.g., col./line: 6/15-20), and

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a data and clock recovery circuit for recovery of data and corresponding clocking information from the corresponding electrical signal and outputting said data as a respective recovered electrical signal (254a of Figure 2, e.g., col./line: 6/34-36), said data and clock recovery circuit recovering data streamed at multiple different clock rates (e.g., col./line: 3/15-20); an electronic switch for transmitting each of the respective recovered electrical signals to at least one of a plurality of output ports under control of an external control signal (255 of Figure 2, e.g., col./line: 6/14-20); and a plurality of electronic to optical (EO) interface units coupled to said plurality of output ports, respectively (258 of Figure 2, e.g., col./line: 6/45-50).

It would have been obvious to one of ordinary skill in the art at the time of invention to use the OE conversion, clock data recovery of multi-rate circuitry of Bala in the Kuroyanagi invention so that the switching system could serve a variety of communications technologies that are found in modern telecommunications networks. Solheim disclosed a multi-rate, multi-protocol clock and data recovery system, Figures 2, 3 and 4, e.g., col. 3 lines 50-67 and col. 4 lines 1-10. It would have been obvious to one of ordinary skill in the art at the time of invention to provide multi-protocol data recovery in the Kuroyanagi invention since it is desirable to accommodate and interface with the growing number of optical fiber communication system use different protocols and different rates for increased flexibility and complexity of services, see e.g., col. 1 lines 14-22.

6. Claim(s) 24, 25 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroyanagi et al. US 6,433,900 B1 (Kuroyanagi) in view of Bala et al. US 6,272,154 B1 (Bala), Solheim et al. US 6,522,671 B1 (Solheim) and Yoo US 6,519,062 B1 (Yoo).

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Re claim 24 and 25 Kuroyanagi taught

A fault tolerant optical switch apparatus comprising: at least a first demultiplexer (60 of Figure 8A) for demultiplexing a wavelength division multiplexed signal into corresponding spatially separated plurality of demultiplexed signals; at least a first multiplexer (multiplexer in box 61 of Figure 8A) for multiplexing a plurality of optical output streams to form a combined optical data stream output; a first (optical XC NODE 0-system of Figure 8A) and a second optical switch (optical XC NODE 1-system of Figure 8A), wherein the first demultiplexer and the first multiplexer are interconnected to the first and the second optical switches to provide fault tolerant operation.

Kuroyanagi does not disclose

each optical switch comprising: a plurality of optical to electronic (OE) interface units for receiving a plurality of demultiplexed signals respectively, each OE interface unit comprising: an OE converter for converting a respective demultiplexed signal to a corresponding electrical signal; an electronic switch for transmitting each of the respective recovered electrical signals to at least one of a plurality of output ports under control of an external control signal; and a plurality of electronic to optical (EO) interface units coupled to said plurality of output ports, respectively.

Bala taught An optical switch comprising: a plurality of optical to electronic (OE) interface units for receiving a plurality of demultiplexed signals respectively, each OE interface unit comprising: an OE converter for converting a respective demultiplexed signal to a corresponding electrical signal (251 of Figure 2, e.g., col./line: 6/15-20), and a data and clock recovery circuit for recovery of data and corresponding clocking information from the corresponding electrical signal and outputting said data as a respective recovered electrical signal (254a of Figure 2, e.g., col./line: 6/34-36), said data and clock recovery circuit recovering data streamed at multiple different clock rates

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(e.g., col./line: 3/15-20); an electronic switch for transmitting each of the respective recovered electrical signals to at least one of a plurality of output ports under control of an external control signal (255 of Figure 2, e.g., col./line: 6/14-20); and a plurality of electronic to optical (EO) interface units coupled to said plurality of output ports, respectively (258 of Figure 2, e.g., col./line: 6/45-50).

It would have been obvious to one of ordinary skill in the art at the time of invention to use the OE conversion, clock data recovery of multi-rate circuitry of Bala in the Kuroyanagi invention so that the switching system could serve a variety of communications technologies that are found in modern telecommunications networks. Solheim disclosed a multi-rate, mutli-protocol clock and data recovery system, Figures 2, 3 and 4, e.g., col. 3 lines 50-67 and col. 4 lines 1-10. It would have been obvious to one of ordinary skill in the art at the time of invention to provide multi-protocol data recovery in the Kuroyanagi invention since it is desirable to accommodate and interface with the growing number of optical fiber communication system use different protocols and different rates for increased flexibility and complexity of services, see e.g., col. 1 lines 14 22.

Yoo disclosed an external modulator (optical modulator of Figure 19) and tunable laser sources (see Yoo, e.g., col./line: 4/35-40). It would have been obvious to one of ordinary skill in the art at the time of invention to use externally modulated tunable lasers in the Kuroyanagi invention for the benefit of obtaining stable multiple wavelengths from one source which reduces the failure points. (e.g., col./line: 2/9,10).

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Allowable Subject Matter

7. Claims 14 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

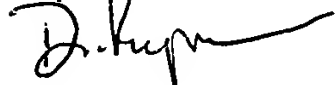
Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Payne whose telephone number is (571) 272-3024. The examiner can normally be reached on M-F, 7a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dcp



David C. Payne
Patent Examiner
AU 2633